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PILLAR CREEK HATCHERY ANNUAL MANAGEMENT PLAN, 1996

By

Chris Clevenger

Steven G. Honnold

and

James N. McCullough

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AUTHORS

Chris Clevenger is the Pillar Creek Hatchery Fish Culturist, Alaska Department of Fish and Game, Commercial Fisheries Management and Development Division, 211 Mission Road, Kodiak, Alaska, 99615

Steven G. Honnold is the Kodiak Area Resource Development Biologist, Alaska Department of Fish and Game, Commercial Fisheries Management and Development Division, 211 Mission Road, Kodiak, Alaska, 99615

James N. McCullough is the Region IV Resource and Development Biologist, Alaska Department of Fish and Game, 211 Mission Road, Kodiak, Alaska, 99615

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TABLE OF CONTENTS

	<u>Page</u>
LIST OF TABLES	i
LIST OF FIGURES.....	ii
INTRODUCTION.....	1
RELEASE SITES FOR 1996	2
EGG TAKE GOALS BY SPECIES AND BROOD SOURCE LOCATION FOR 1995.....	5
HARVEST MANAGEMENT	7
1996 ESCAPEMENT GOALS, BROODSTOCK REQUIREMENTS BY BROOD SOURCE.....	11
SPECIAL STUDIES/RESEARCH	12
TABLES	14
FIGURES.....	20
SIGN-OFF	25

LIST OF TABLES

<u>Table</u>	<u>Page</u>
1. Summary of sockeye and coho salmon egg takes, location, adults required, juveniles produced, stock location and expected return for Pillar Creek Hatchery, 1996.....	14
2. Standard sockeye salmon survival assumptions used to estimate returns for Pillar Creek Hatchery	15
3. Upper Station sockeye salmon egg takes, past, present, and proposed.....	16
4. Afognak Lake sockeye salmon egg takes, past, present, and proposed	17
5. Malina Lake sockeye salmon egg takes, past, present, and proposed.....	18
6. Laura Lake sockeye salmon egg takes, past, present, and proposed.....	18
7. Little Kitoi Lake sockeye salmon egg takes, past, present, and proposed	19

LIST OF FIGURES

<u>Figure</u>	<u>Page</u>
1. Map of Kodiak and Afognak Islands showing release sites: Hidden, Crescent, Waterfall, Spiridon, Malina, Laura, Jennifer, Sorg, Ruth Lakes; and egg take sites: Upper Station, Afognak, Malina, and Saltery Lakes	20
2. Pillar Creek Hatchery flow chart for 1995 egg takes, brood sources, and stocking locations	21
3. Pillar Creek Hatchery flow chart for 1996 egg takes, brood sources, and stocking locations	23

INTRODUCTION

Pillar Creek Hatchery, constructed in the summer of 1990 under a cooperative agreement between the State of Alaska, Department of Fish and Game and Kodiak Regional Aquaculture Association (KRAA), is located on the road system approximately seven miles north of the City of Kodiak. The facility has the capacity to incubate 20 million salmon eggs and was designed to increase salmon production for Kodiak Island seiners and set gill net fishermen by enhancing barren-lake systems with sockeye salmon fry and to a lesser extent, coho salmon fry, and to also supplement wild stocks to rehabilitate depleted runs. Pillar Creek Hatchery is operated by funds provided by Kodiak Regional Aquaculture Association (KRAA), a non-profit salmon fishers' organization.

The primary project facilitated by Pillar Creek Hatchery is the stocking of late-run sockeye salmon fry into Spiridon Lake. The intent of this project is to create a sockeye salmon fishery by utilization of Spiridon Lake as a fry nursery area. The rearing capacity of the lake has been estimated to be 11 million sockeye salmon fry. In order to minimize the impacts of rearing on the standing crop of macrozooplankton a conservative stocking strategy has been adopted. Thus, stocking 5 million fry for two years, 8 million for the following two years, finally reaching the capacity of 11 million fry after five years is the goal of the project. A brood stock for this project is currently being developed at Little Kitoi Lake near Kitoi Bay Hatchery using Upper Station stock. The 1994 Hatchery Management Plan was amended to change the brood source for Spiridon Lake stocking to Sallery Lake sockeye for an interim period until the brood source goals are attained at Little Kitoi Lake. This brood source change has been approved by the U.S. Fish and Wildlife Service for one year only. In 1995, Upper Station sockeye salmon were, again, used for brood stock. The sockeye run to Little Kitoi is expected to provide sufficient salmon for brood stock in 1996.

In 1996, Jennifer Lake will not be stocked with late-run fry due to lower than expected survival of Upper Station fry.

Early run sockeye salmon from Afognak Lake is the brood source for stocking several additional barren lakes in the Kodiak area. A total of 2.2 million Afognak Lake sockeye salmon eggs were collected in 1995. It is currently projected that the stocking levels of juvenile sockeye salmon in 1996 will be 400,000 for Hidden Lake, 100,000 for Little Waterfall Lake, 400,000 for Crescent Lake, 50,000 for Little Kitoi Lake, 150,000 for Sorg Lake, and 300,000 for Afognak Lake.

The stocking of Afognak Lake with sockeye salmon juveniles is a result of higher than expected egg to fry survival rates.

Rehabilitation projects continue at the Malina and Laura Lakes systems with 500 and 200 thousand sockeye salmon eggs collected, respectively. Approximately 400,000 juveniles are expected to be released at Malina Lake and 180,000 at Laura Lake.

A small scale coho salmon science education project resulted in 3,000 eggs collected at Buskin River and will provide eggs for several classroom incubation programs in the Kodiak area schools. Also, 100,000 Buskin River coho salmon eggs were taken to support road system stocking for enhancing sport fishing opportunities.

Since Pillar Creek Hatchery is a relatively new facility, this management plan will continue to evolve in an effort to bring the egg numbers up to the 20 million egg capacity. There are many factors that have, and will continue to, bring changes to this document. Inseason lake productivity assessment may result in adjustments to stocking densities in order to maintain optimal stocking levels. This management plan also includes proposals which are in the process of review as required by the Fish Transport Permitting or budget allocation processes.

RELEASE SITES FOR 1996

A. Spiridon Lake Release from 1995 Upper Station Lake egg take:

1. Species: Sockeye Salmon
2. Eggs Taken: 6,823,000 (2,201 females, 1,467 males, 3,668 total adults)
3. Number To Be Released (June): 4,500,000 fry (0.2g) 500,000 eyed eggs to Kitoi Bay Hatchery
4. Expected Return: 180,000 (August, 1999 and 2000)
5. FTP # 89A-0001 (expires 9/15/97)

B. Jennifer Lake Release from 1995 Upper Station egg take:

The Spiridon Lake fry stocking and Kitoi Bay smolt programs were prioritized for the Upper Station eggs. There were not sufficient eggs collected for fry stocking at Jenny Lakes in 1996.

C. Hidden Lake Release from 1995 Afognak Lake egg take:

1. Species: Sockeye Salmon
2. Eggs Taken: 600,000 (240 females, 160 males, 400 total adults)
3. Number To Be Released (June and October): 150,000 pre-smolt (12.5 g) and 260,000 fing. (1.0 g)
4. Expected Return: 22,900 (June, 1999 and 2000)
5. FTP #: 91A-0017 (expires 12/31/96)

D. Little Waterfall Bay Lake Release from 1995 Afognak Lake egg take:

1. Species: Sockeye Salmon
2. Eggs Taken: 200,000 (80 females, 55 males, 135 total adults)
3. Number To Be Released (October): 100,000 pre-smolt (12.5 g)
4. Expected Return: 12,500 (June, 1999 and 2000)
5. FTP #: 91A-0021 (expires 12/31/96)

E. Crescent Lake Release from 1995 Afognak Lake egg take:

1. Species: Sockeye Salmon
2. Eggs Taken: 800,000 (320 females, 215 males, 535 total adults)
3. Number To Be Released (June): 400,000 fry (0.5 g)
4. Expected Return: 12,500 (June, 1999 and 2000)
5. FTP #: 91A-0022 (expires 12/31/96)

F. Little Kitoi Lake release from 1995 Afognak Lake egg take:

1. Species: Sockeye Salmon
2. Eggs Taken: 200,000 (90 females, 60 males, 150 total adults)
3. Number To Be Released (October): 50,000 pre-smolt (12.5 g)
4. Expected Return: 5,000 (June, 1999 and 2000)
5. FTP #: 93A-0140 (expires 10/31/95)

G. Sorg Lake release from 1995 Afognak Lake egg take:

1. Species: Sockeye Salmon
2. Eggs Taken: 300,000 (120 females, 80 males, 200 total adults)
3. Number To Be Released (August): 150,000 pre-smolt (4.0 g)
4. Expected Return: 9,000 (June, 1999 and 2000)
5. FTP #: 94A-0037 (expires 7/31/99)

H. Alternate contingency Afognak Lake Release from 1995 Afognak Lake egg take:

1. Species: Sockeye Salmon
2. Eggs Taken: 300,000 (120 females, 80 males, 200 total adults)
3. Number To Be Released (July): 300,000 pre-smolt (<4.0 g)
4. Expected Return: 15,000 (June, 1999 and 2000)
5. FTP #: 88A-1021 (expires 9/15/97)

Fish releases were not projected for Afognak Lake in 1996. Afognak Lake is used each year as an alternate release site for Afognak Lake salmon (destined for other projects) if an unforeseen situation arises during incubation and rearing or if stocking densities change due to inseason limnology analysis. Improved survivals and excess eggs will require stocking Afognak Lake in 1996.

I. Ruth Lake release from 1995 Saltery Lake egg take:

1. Species: Sockeye Salmon
2. Eggs Taken: 220,000 (73 females, 43 males, 122 total adults)
3. Number To Be Released (June): 150,000 fry (.25 g)
4. Expected Return: 6,000 (June, 1999 and 2000)
5. FTP #: 95A-0086 (expires 9/30/96)

J. Laura Lake Release from 1995 Laura Lake egg take:

1. Species: Sockeye Salmon
2. Eggs Taken: 238,000 (100 females, 70 males, 170 total adults)
3. Number To Be Released (June): 80,000 fingerlings (2.5 g); October 100,000 pre-smolt (12.5 g)
4. Expected Return: 12,500 (June, 1999 and 2000)
5. FTP #: 93A-0113 (expires 12/31/98)

K. Malina Lake Release from 1995 Malina Lake egg take:

1. Species: Sockeye Salmon
2. Eggs Taken: 593,000 (229 females, 151 males, 380 total adults)
3. Number To Be Released (June): 200,000 fingerlings (2.0 g); October 200,000 pre-smolt (12.5 g)
4. Expected Return: 26,000 (June, 1999 and 2000)
5. FTP #: 94A-0043 (expires 10/30/95)

L. Potato Patch Lake Coho Release from 1995 Buskin River Sci/Ed egg take:

1. Species: Coho Salmon
2. Eggs Taken: 3,000 (1 female, 1 male, 2 total adults)
3. Number To Be Released: 600 fry
4. Expected Return: 9 (September, 1999 and 2000)
5. FTP #: P-96-001: Peterson Elementary, P-96-038: East Elementary, P-96-047: East Elementary (expire 12/31/96); other schools (Old Harbor, Ouzinkie, Akhiok, Port Lions and Chiniak) may also apply for science/education permits.

M. Road System Coho Releases from 1995 Buskin River egg take:

1. Species: Coho Salmon
2. Eggs Taken: 60,000 (18 females, 12 males, 30 total adults)
3. Number To Be Released: 40,000 fry (Mayflower Lake 10,000, Island Lake 10,000, Dark Lake 5,000, Mission Lake 10,000, Potato Patch Lake 5,000)
4. Expected Return: 600 (September, 1999 and 2000)
5. FTP #: 93A-0106 (Mayflower Lake: expires 12/31/2003), 93A-0107 (Islands Lake: expires 12/31/2003), 93A-0108 (Dark Lake: expires 12/31/2003), 93A-0109 (Mission Lake: expires 12/31/2003), 93A-0110 (Potato Patch Lake: expires 12/31/2003)

All sockeye will be transported by air as fed fry, fingerling, or pre-smolt to the remote lakes previously specified. Stocking of fed fry and fingerlings will correspond to the timing of each

lake's plankton bloom. Fry will be released at the lake surface. Pre-smolt will be released in late October or early November, just prior to lake freeze up to minimize the likelihood of plankton cropping.

A small number of Buskin River coho salmon eggs will be used for educational programs in the local schools. There are currently seven schools with Sci-Ed permits that allow use of up to 200 eggs each from this stock. Eggs incubated in classroom incubators will be released into Potato Patch Lake under the supervision of the Pillar Creek Hatchery Manager. The exception to this is the Old Harbor, Ouzinkie, Akhiok, and Port Lions schools in which resultant fry will be destroyed. Coho are also released in several road system lakes for sport fish purposes as previously stated.

EGG TAKE GOALS BY SPECIES AND BROOD SOURCE LOCATION FOR 1996

Egg take goals, and release numbers may be adjusted in season in response to lake studies.

A. Little Kitoi Lake/Upper Station Lake sockeye salmon egg take:

1. Egg Take Goal: 8,000,000 (L.Kitoi - 3,200 females, 2,733 males, 5,933 total adults; Upper Station - 2,666 females, 1,777 males, 4,443 total adults)
2. Number To Be Released and Location (June 1997): 6,000,000² (0.2-0.4g), Spiridon Lake
3. Expected Return: 240,0000 (August, 2000 and 2001)
4. FTP #: 89A-0001 (Upper Station: expires 9/15/97), 92A-0090 (Little Kitoi Bay: expires 9/30/95)

If adult returns at Little Kitoi Bay are not sufficient to supply the needed eggs for Spiridon stocking, the balance will be taken from Upper Station Lake.

B. Little Kitoi Lake/U.Station Lake sockeye salmon egg take:

1. Egg Take Goal: 350,000 (L.Kitoi - 194 females, 129 males, 323 total adults; Upper Station - 116 females, 80 males, 197 total adults;)
2. Number To Be Released and Location (June 1997): 250,000 (0.2 g), Jennifer Lake
3. Expected Return: 10,000 (August, 2000 and 2001)
4. FTP #: 92A-0088 (Little Kitoi Bay: expires 9/30/95), 91A-0020 (Upper Station: expires 12/31/96)

C. Afognak Lake sockeye salmon egg takes:

1. Egg Take Goal: 600,000 (240 females, 160 males, 400 total adults)
2. Number To Be Released and Location (June and October 1997): 250,000 (0.3 g), and 150,000 (>5.0 g), for total of 400,000, Hidden Lake

² Actual egg take to be determined no later than August 15, 1995 pending limnology results.

3. Expected Return: 30,000 (June, 2000 and 2001)
4. FTP #: 91A-0017 (expires 12/31/96)

1. Egg Take Goal: 500,000 (200 females, 140 males, 340 total adults)
2. Number To Be Released and Location (October 1997): 300,000 (12.5 g), Little Waterfall Lake
3. Expected Return: 30,000 (June, 2000 and 2001)
4. FTP #: 91A-0021 (expires 12/31/96)

1. Egg Take Goal: 500,000 (160 females, 100 males, 260 total adults)
2. Number To Be Released and Location (July 1997): 400,000 (0.25 g), Crescent Lake
3. Expected Return: 16,000 (June, 2000 and 2001)
4. FTP #: 91A-0022 (expires 12/31/96)

1. Egg Take Goal: 200,000 (80 females, 50 males, 130 total adults)
2. Number To Be Released and Location (October 1997): 150,000 (10.0 g), Sorg Lake
3. Expected Return: 18,750 (June, 2000 and 2001)
4. FTP #: 94A-0037 (expires 7/31/99)

1. Egg Take Goal: 200,000 (90 females, 60 males, 150 total adults)
2. Number To Be Released and Location (October 1997): 150,000 (12.5 g), L. Kitoi Lake
3. Expected Return: 15,000 (June, 2000 and 2001)
4. FTP #: 93A-0140 (expires 10/31/95)

1. Egg Take Goal: 0 (0 females, 0 males, 0 total adults)
2. Number To Be Released and Location (July 1997): 500,000 (g), Afognak Lake (only as a contingency plan)
3. Expected Return: 50,000 (June, 2000 and 2001)
4. FTP #: 88A-1021 (expires 9/15/97)

D. Saltery Lake sockeye salmon egg take:

1. Egg Take Goal: 200,000 (32 females, 20 males, 52 total adults)
2. Number To Be Released and Location (June 1997): 125,000 (0.3 g), Ruth Lake
3. Expected Return: 5,000 (July, 2000 and 2001)
4. FTP#: 95A-0086 (expires 9/30/96)

E. Malina Lake sockeye salmon egg take:

1. Egg Take Goal: 1,500,000 (600 females, 400 males, 1,000 total adults)

2. Number To Be Released and Location (June, July, October 1997): 600,000 (0.3 g), 250,000 (1.5 g), 250,000 (12.5 g) Malina Lake
3. Expected Return: 41,500 (June, 2000 and 2001)
4. FTP #: 94A-0043 (expires 10/30/95)

F. Laura Lake sockeye salmon egg take:

1. Egg Take Goal: 1,000,000 (360 females, 240 males, 600 total adults)
2. Number To Be Released and Location (June, October 1997): 580,000 (0.3 g), 120,000 (12.5 g), Laura Lake
3. Expected Return: 20,700 (June, 2000 and 2001)
4. FTP #: 93A-0113 (expires 12/31/98)

G. Buskin River Sci/Ed coho salmon egg take:

1. Egg Take Goal: 3,000 (1 females, 1 males, 2 total adults)
2. Number To Be Released and Location (June 1997): 600 fry, Potato Patch Lake
3. Expected Return 9 (September, 2000 and 2001)
4. FTP #: P-96-001: Peterson Elementary, P-96-038: East Elementary, P-96-047: East Elementary (expire 12/31/96); other schools (Old Harbor, Ouzinkie, Akhiok, Port Lions and Chiniak) may also apply for science/education permits.

H. Buskin River coho salmon egg take:

1. Egg Take Goal: 150,000 (55 females, 45 males, 100 total adults)
2. Number To Be Released and Location (June 1997): 13,000 fry, Mayflower Lake 45,000, Island Lake 15,000, Dark Lake 25,400, Mission Lake 19,000, Potato Patch Lake 4,200, Pony Lake, 7,000, Southern Lake
3. Expected Return: 1,929 (September, 2000 and 2001)
4. FTP #: 93A-0106 (Mayflower Lake: expires 12/31/2003), 93A-0107 (Islands Lake: expires 12/31/2003), 93A-0108 (Dark Lake: expires 12/31/2003), 93A-0109 (Mission Lake: expires 12/31/2003), 93A-0110 (Potato Patch Lake: expires 12/31/2003)

HARVEST MANAGEMENT

Estimated run, brood, and harvest numbers: 1996 total projected sockeye salmon runs include 109,000 Spiridon Lake, 26,000 Hidden Lake, 14,000 Crescent Lake, and 17,000 Waterfall Lake salmon.

A. Release Site: Spiridon Lake

In 1995 to avoid harvest of natural stocks and/or target more discretely on Spiridon sockeye salmon, the Department reduced the size of the terminal harvest area opened to commercial fishing. As the fishery evolves, additional adjustments may be necessary.

The Spiridon Bay harvest strategy is designed to allow for the harvest of enhanced sockeye salmon returning to Spiridon Lake (Telrod Cove) and to provide adequate protection for escapements of natural salmon stocks returning to streams in the area. The original intent of this enhancement project was for the harvest of the returning enhanced salmon to occur in traditional commercial fishing areas of the Northwest Kodiak District during openings directed to harvest Karluk sockeye and west-side pink and chum salmon stocks. A terminal harvest area, however, is required to provide for an orderly harvest of enhanced sockeye which have migrated past the traditional commercial fishing areas of the Northwest Kodiak District. The terminal harvest area, addressed in this management plan, will be used if a surplus of sockeye salmon is observed at Telrod Cove.

The 1995 Spiridon Bay terminal harvest area (THA), by emergency order regulation, included all waters of Telrod Cove north of a line extending from Stream Point at 57° 39' 00" N. lat., 153° 38' 30" West long. to the opposite shore at 57° 38' 48" N. lat., 153° 37' 42" West long. When a harvestable surplus of enhanced sockeye salmon is documented in the THA, continuous fishing periods will be announced by the Department. A barrier seine will be deployed again in 1996 to assure that all Spiridon enhanced sockeye will be harvested. Special harvest openings will be coordinated, if possible, to occur at the beginning of fishing periods scheduled for management sections in the Northwest Kodiak District.

By regulation, the legal gear type for the terminal harvest area is seine gear only.

The Department recognizes that some incidental harvest of natural stocks could occur in this area while the fishery is managed to harvest the enhanced Spiridon Lake sockeye salmon. The Department intends, however, to prevent jeopardizing the escapement of natural salmon stocks.

B. Release Site: Hidden Lake

The Foul Bay harvest strategy is designed to allow for the harvest of sockeye salmon returning to Foul Bay produced from the Hidden Lake enhancement project and to provide for the protection of natural salmon stocks in the area.

Hidden Lake sockeye returns will be harvested in special openings in the Foul Bay Terminal Harvest Area. Fishing time directed at returning sockeye salmon will be dependent on a minimum escapement of 3,000 pink salmon into Hidden Lake Creek. The majority of fishing time, however, for Hidden Lake sockeye is expected to occur prior to the arrival of pink salmon in late July. The sockeye salmon harvest is expected to occur primarily in the Foul Bay Terminal Harvest Area, however, some sockeye salmon may be harvested in the Northwest Afognak District. Sockeye salmon harvested between July 6th and July 25th will count towards the 15,000 fish threshold level as indicated in the North Shelikof Strait Sockeye Salmon Management Plan.

There are no brood stock requirements for sockeye salmon returning to Hidden Lake. The THA, addressed in this management plan, will be used if a surplus warrants a commercial fishery.

The Foul Bay THA will address that area of Foul Bay east of 152° 47'12" West long. By regulation, the legal gear type for the terminal harvest area is seine gear only.

When a harvestable surplus of enhanced sockeye salmon is documented in the terminal harvest area, continuous fishing periods may be announced by the Department. A weir will be deployed in 1996 to assure that all Hidden Lake sockeye salmon will be harvested, and to enumerate escapement.

The Department recognizes that some incidental harvest of natural stocks could occur in this area while the fishery is managed to harvest the enhanced Hidden Lake sockeye salmon. The Department intends, however, to prevent jeopardizing the escapement of natural salmon stocks.

To avoid harvest of natural stocks and target Hidden Lake sockeye salmon, the Department may need to adjust the size of the terminal harvest area opened to commercial fishing.

C. Release Site: Waterfall Lakes

The Waterfall Bay harvest strategy will allow for the harvest of enhanced sockeye salmon returning to Waterfall Bay and provide safe guards to assure that escapement goals for natural salmon stocks are met.

Sockeye salmon harvest is expected to occur in the Perenosa Bay Section of the Afognak District. A Terminal Harvest Area (THA) is required to provide for an orderly harvest of enhanced sockeye which have migrated past the traditional commercial fishing areas of the Perenosa Bay Section. Since escapement and brood stock are not required, all returning enhanced sockeye salmon will be available for harvest.

The Waterfall Bay THA will address all waters seaward of the stream terminus of stream number 251-822 (58°23'57" N.lat., 152°30'12" W.long.) that are within a one nautical mile arc.

By regulation, the legal gear type for the terminal harvest area is seine gear only.

When a harvestable surplus of enhanced sockeye salmon is documented in the terminal harvest area, continuous fishing periods may be announced by the Department. A barrier seine or weir will be deployed again in 1996 to assure that all Waterfall Lake sockeye salmon will be harvested.

The Department recognizes that some incidental harvest of natural salmon stocks could occur in this area while the fishery is managed to harvest the enhanced Waterfall Lake sockeye salmon. The Department intends, however, to prevent jeopardizing the escapement of natural salmon stocks. To avoid harvest of natural stocks and target Waterfall Lake sockeye salmon, the Department may need to adjust the size of the terminal area opened to commercial fishing.

D. Release Site: Crescent Lake

The purpose of the project is to allow for the harvest of enhanced sockeye salmon returning to Crescent Lake and to provide adequate protection for escapements of natural salmon stocks.

The harvest of Crescent Lake sockeye salmon is expected to occur during normal fishing periods in the Central Section of the Northwest Kodiak District.

Due to the location of the return site (Settler Cove) special openings are not expected to occur within the Terminal Harvest Area.

E. Release Sites: Jennifer Lake, Malina Lake, Ruth Lake and Sorg (McDonalds Lagoon) Lake.

The 1996 Jennifer Lake return will be harvested incidentally in the Kitoi Bay hatcheries pink and coho common property fisheries.

The 1996 Malina Lake's return should be at escapement level only. If a harvestable surplus does occur and it appears that optimum escapement levels will be exceeded, inseason closed water adjustments for Malina Lakes systems will occur.

The Ruth Lake and Sorg Lake returns remain in the developmental phase. No returns to these systems will occur in 1996.

F. Harvest Management by Species for 1996:

1. General Conditions:

The primary objective of Pillar Creek Hatchery is to provide fish for the common property fishery. It is recognized that a joint effort among ADF&G and KRAA is necessary to continue the operation of the hatchery at full production levels.

The ADF&G Kodiak Area Management Biologist will manage the fishery based on runs of wild or natural stocks. Enhanced sockeye are expected to be harvested incidental to fisheries targeting other stocks unless otherwise specified.

\$360,000 will be needed to operate the Pillar Creek Hatchery. This budget may be provided by a cooperative agreement between Kodiak Regional Aquaculture Association and CFM&D Division of the Alaska Department of Fish and Game.

When brood stock is taken from spawning systems with established escapement requirements, the number of fish used for brood-stock will not reduce the wild fish spawning population below the minimum escapement goals for that system.

2. Special Harvest Area (SHA) Description and Conditions:

A SHA is not needed for Pillar Creek Hatchery cost recovery. THA's will be used for harvest management of Spiridon Lake, Hidden Lake, and Waterfall Lake sockeye salmon in 1996.

3. Harvest Strategies:

Enhanced sockeye returning to Spiridon will be harvested in the west side pink salmon fishery and in special openings in Telrod Cove. No salmon are needed for brood, escapement or cost recovery. A run of 109,000 sockeye salmon is projected for 1996.

Harvest information will be monitored through the ADF&G fish ticket information collected from each buyer. Scale samples will be taken from 240 adult fish per week (600 total) from the Telrod Cove openings. A total of 600 scale samples will be collected per week either at the Port of Kodiak or from the commercial catch from the westside Kodiak Districts in a coordinated effort between Development and Research sections of ADF&G.

Hidden Lake sockeye harvest will occur in the Foul Bay Terminal Harvest Area. A run of 23,000 sockeye salmon is projected for 1996.

Waterfall Lake sockeye harvest will occur in Perenosa Bay and in the Waterfall Bay Terminal Harvest Area. A run of approximately 11,000 salmon is projected for 1996.

Harvest information from runs at Foul and Waterfall Bays will be monitored through the ADF&G fish harvest ticket information collected from each buyer. Scale samples will be collected by Development section personnel from 240 adult fish per week (600 total) at each location during the fishing periods.

Crescent Lake sockeye returns will be harvested in the Central Section of the Northwest Kodiak District. Special openings in the Crescent Lake Terminal Harvest area are not anticipated. A run of 9,000 sockeye salmon is projected in 1996.

Harvest information from the sockeye salmon run at Crescent will be monitored through the ADF&G fish harvest ticket information collected from each buyer. Currently, a scale sampling program is not planned.

**1996 ESCAPEMENT GOALS, AND BROOD STOCK REQUIREMENTS
BY BROOD SOURCE**

<u>Brood Source</u>	<u>Species</u>	<u>Numbers Expected</u>
L. Kitoi Bay	Late Run	5,333 Brood stock

	Sockeye	An escapement of 10,000 would meet the egg take requirements of Kitoi and Pillar, and allow 4,000 natural spawners.
Afognak Lake	Early Run Sockeye	1,180 Brood stock 40,000 Minimum Escapement (50% of escapement over 40,000 is available for egg take).
Malina Lake	Early Run Sockeye	1,000 Brood stock 1,600 minimum escapement (50% of escapement over 1,600 is available for egg take 20,000 Desired Escapement No egg take if escapement exceeds 16,000.
Upper Station	Late Run Sockeye	3,200 Brood stock 150,000 late run Minimum Escapement (50% of escapement over 150,000 is available for egg take). Contingent upon egg take level at Little Kitoi.
Laura Lake	Early Run Sockeye	600 Brood stock 5,000 Minimum Escapement (50% of escapement over 5,000 is available for egg take). No egg take if escapement exceeds 25,000.
Saltery Lake	Late Run Sockeye	55 Brood Stock 40,000 Minimum Sockeye Escapement (50% of escapement over 40,000 is available for egg take).
Buskin Lake	Coho	100 Brood Stock 5,300 Minimum Escapement (50% of escapement over 5,300 is available for egg take).

SPECIAL STUDIES/RESEARCH

Stock separation for these projects will be carried out, similar to 1995, with scale pattern analysis. Because multiple stocks migrate along Kodiak's westside, stock identification is required to quantify the Spiridon Lake sockeye component of the catch. The number of Spiridon Lake sockeye salmon commercially harvested in the NW and SW Kodiak Districts during 1995 was estimated using a unique freshwater scale pattern. Approximately 97,000 Spiridon Lake sockeye salmon were harvested, of which 33% (31,692) were harvested in the Spiridon Bay Terminal Harvest Area, 31% (29,808) in Uyak Bay, and 36% (35,209) in Uganik Bay.

The Spiridon Lake sockeye run contribution to the 1996 westside commercial fishery (NW and SW Kodiak Districts) will be estimated using scale pattern identification with a report summarizing results generated by October 31, 1996. Funding for this project will be provided by KRAA.

Smolt abundance will be estimated and samples collected for age and condition during migration out of Spiridon Lake as a check on stocking density. Smolt will also be sampled for condition and age at Hidden, Waterfall and Crescent Lakes. Lake sampling will be conducted to evaluate zooplankton abundance and water quality parameters. All systems will be monitored by townetting and hydroacoustics to evaluate population trends.

Table 1. Summary of sockeye and coho salmon egg takes, location, adults required, juveniles produced, stocking location and expected return for Pillar Creek Hatchery, 1996.

Brood Stock	Adults Required	Eggs (millions)	Juveniles (millions)	Lake Stocked	Expected Return
L.K./U.S.	5,300/3,200	8.0	5.5	Spiridon	240,000
A.L.	400	0.6	0.4	Hidden	30,000
A.L.	260	0.4	0.4	Crescent	16,000
A.L.	340	0.5	0.3	Waterfall	30,000
A.L.	130	0.2	0.2	Sorg	18,750
S.L.	50	0.2	0.1	Ruth	5,000
M.L.	1,000	1.5	1.1	Malina	41,500
L.K./U.S.	320/200	0.4	0.3	Jennifer	10,000
L.L.	600	1.0	0.7	Laura	20,700
A.L.	150	0.2	0.2	L.Kitoi	15,000
B.R. Coho	100	0.2	0.1	Road System	1,929
PCH Totals	7,565	13.2	9.3		428,879

NOTE: A.L. Afognak Lake, U.S. = Upper Station, M.L. = Malina Lake, L.K. = Little Kitoi Lake, L.L. = Laura Lake, P.C.H. = Pillar Creek Hatchery, B.R. = Buskin River, S.L. = Saltery Lake

^a Actual egg take to be determined no later than August 15, 1996 pending limnology results.

Table 2. Sockeye salmon survival assumptions used to estimate returns for Pillar Creek Hatchery.

Life History Stage Size (g)	System		
	Barren	Non-barren	Estuary
Fry 0.3	4.0%	1.5%	
Fingerling 1.5	5.5%	3.0%	
Pre-smolt 5.0	12.5%	10.0%	
Smolt 8.0	15.0%	15.0%	15.0%

Table 3. Upper Station sockeye salmon egg takes, past, present, and proposed.

Brood Year	Adults	Eggs (millions)	Facility	No. Stocked and Year (millions)	Stocking Location
1988	120	0.2	KBH	0.15 - 1989	Kitoi Bay
1989	3,000	5.0	PCH/KBH	0.26 - 1990 0.8 - 1990 0.3 - 1990	Spiridon Lake L. Kitoi Bay L. Kitoi Lake
1990	3,700	4.5	PCH	3.5 - 1991	Spiridon Lake
		1.5	KBH	1.25 - 1991	L. Kitoi Bay
1991	3,800	4.0	PCH	2.2 - 1992	Spiridon Lake
		2.3	KBH	1.8 - 1992	L. Kitoi Bay
1992	6,816	9.8	PCH	4.2 - 1993	Spiridon Lake
		1.9	KBH	0.05 - 1993 0.3 - 1994	L. Kitoi Lake L. Kitoi Bay
1993	5,551	7.8	PCH	5.0 - 1994 0.3 - 1994	Spiridon Lake Jennifer Lake
		2.0	KBH	1.6 - 1994	L. Kitoi Bay
1994	120	0.3	PCH	0.0 - 1995 0.2 - 1995	Spiridon Lake Jennifer Lake
	120	0.3	KBH	0.0 - 1995 0.2 - 1995 0.0 - 1996	L. Kitoi Bay Jennifer Lake L. Kitoi Bay
1995	3,668	7.3	PCH	4.5 ^a - 1996 0.0 - 1996	Spiridon Lake Jennifer Lake
	0	0.5	KBH	0.0 - 1995 0.0 - 1996 0.5 - 1997	L. Kitoi Bay Jennifer Lake L. Kitoi Bay
1996 ^b	3,400	8.3	PCH	6.0 ^a - 1997 0.2 - 1997	Spiridon Lake Jennifer Lake
	200	0.4	KBH	0.0 - 1996 0.3 - 1997	L. Kitoi Bay Jennifer Lake

^a Actual egg take to be determined no later than August 15, 1996 pending limnology results.

^b Upper Station egg take will be a contingent site if insufficient brood stock are available at the primary egg take location, Little Kitoi Lake.

Table 4. Afognak Lake sockeye salmon egg takes, past, present, and proposed.

Brood Year	Adults	Eggs (millions)	Facility	No. Stocked and Year (millions)	Stocking Location
1991	2,076	2.6	PCH	0.26 - 1992 0.40 - 1992 0.60 - 1992 0.46 - 1992 0.18 - 1992	Hidden Lake Crescent Lake Waterfall Lakes Afognak Lake L. Kitoi Bay
1992	1,890	2.7	PCH	1.1 - 1993 0.3 - 1993 0.2 - 1993	Hidden Lake Crescent Lake Waterfall Lakes
1993	2,169	3.4	PCH	0.25 - 1994 0.3 - 1994 0.15 - 1994 0.18 - 1994 0.10 - 1995	Hidden Lake Crescent Lake Waterfall Lakes L. Kitoi Lake L. Waterfall LK
1994	1,190	1.8	PCH	0.10 - 1995 0.10 - 1995 0.10 - 1995 0.05 - 1995 0.10 - 1995	Hidden Lake Crescent Lake Waterfall Lakes Ruth Lake ^a L. Kitoi Lake
1995	1,440	1.8	PCH	0.4 ^b - 1996 0.4 - 1996 0.1 - 1996 0.15 - 1996 0.10 - 1996 0.30 - 1996	Hidden Lake Crescent Lake Waterfall Lakes Sorg Lake L. Kitoi Lake Afognak Lake
1996	1,200	2.0	PCH	0.4 ^b - 1997 0.4 - 1997 0.3 - 1997 0.15 - 1997 0.13 - 1997 0.15 - 1997	Hidden Lake Crescent Lake Waterfall Lakes Sorg Lake Ruth Lake ^a L. Kitoi Lake

FTP's for Afognak Lake egg takes will expire in 1996. A five year extension will be submitted at that time.

^b Actual egg take to be determined no later than August 15, 1996 pending limnology results.

Table 5. Malina Lake sockeye salmon egg takes, past, present, and proposed.

Brood Year	Adults	Eggs (millions)	Facility	No. Stocked and Year (millions)	Stocking Location
1991	120	0.15	PCH	0.09 - 1992	Malina Lake
1992	1,005	1.5	PCH	0.75 - 1993	Malina Lake
1993	644	0.9	PCH	0.5 - 1994	Malina Lake
1994	350	0.5	PCH	0.1 - 1995	Malina Lake
1995	400	0.59	PCH	0.4 - 1996	Malina Lake
1996	1,000	1.5	PCH	1.1 - 1997	Malina Lake

FTP for the Malina Lake Project will expire in 1996. The goals will remain the same and the project will end at that time pending escapement levels.

Table 6. Laura Lake sockeye salmon egg takes, past, present, and proposed.

Brood Year	Adults	Eggs (millions)	Facility	No. Stocked and Year (millions)	Stocking Location
1993	218	0.3	PCH	0.12 - 1994	Laura Lake
1994	53	0.06	PCH	0.04 - 1995	Laura Lake
1995	170	0.2	PCH	0.18 - 1996	Laura Lake
1996	600	1.0	PCH	0.7 - 1997	Laura Lake

FTP for the Laura Lake Project will expire in 1997. The 1996 and future egg takes may be suspended if logistics make collecting brood fish too difficult.

Table 7. Little Kitoi Lake sockeye salmon egg takes, past, present, and proposed.

Brood Year	Adults	Eggs (millions)	Facility	No. Stocked and Year (millions)	Stocking Location
1992	1,011	0.59	KBH	0.0 - 1993	L. Kitoi Bay
1993	1,050	1.1	KBH	0.88 - 1995	L. Kitoi Bay
1994	600	1.5	KBH	0.0 - 1995 0.15 - 1995 0.88 - 1996 0.3 - 1995	L. Kitoi Bay L. Kitoi Lake L. Kitoi Bay Jennifer Lake
1995	298	.186	KBH	0.0 - 1996 0.0 - 1996 0.1 - 1997	L. Kitoi Bay L. Kitoi Lake L. Kitoi Bay
1996	600	1.5	KBH	0.0 - 1997 0.15 - 1997 0.88 - 1998	L. Kitoi Bay L. Kitoi Lake L. Kitoi Bay
	5,600	8.4	PCH	5.5 - 1997 0.3 - 1997	Spiridon Lake Jennifer Lake

Figure 2. Pillar Creek Hatchery flow chart for 1995 egg takes, brood sources and stocking locations.

<u>Brood Source</u>	<u>Brood Source</u>
Upper Station/Little Kitoi Bay Sockeye	Malina Lake Sockeye
6.823 Million Eggs	0.59 Million Eggs
Spiridon Lake 4.5 Million Fry FTP # 89A-0001/92A-0090	Malina Lake 0.2 million PS and .2 million fingerling FTP # 91A-0114
Jennifer Lake 0.0 Million Fry FTP # 91A-0020/92A-0088	
Kitoi Bay Hatchery .5 Million eyed eggs FTP # 93A-0117	
<u>Brood Source</u>	<u>Brood Source</u>
Afognak Lake Sockeye	Saltery Lake Sockeye
2.1 Million Eggs	.2 Million Eggs
Hidden Lake 0.26 Million fingerling and 0.15 Million PS FTP # 91A-0017	Ruth Lake .1 Million Fry FTP # new
Crescent Lake 0.40 Million fry FTP # 91A-0022	
Waterfall Lake 0.10 Million PS FTP # 91A-0021	
L. Kitoi Lake 0.10 Million PS FTP # 93A-0140	<u>Brood Source</u>
Afognak Lake 0.30 Million fingerling FTP # 88A-1021	Laura Lake
Sorg Lake 0.15 Million PS FTP # 94A-0037	0.2 Million Eggs
	Laura Lake 0.1 Million PS and .08 Million fingerling FTP # 93A-0113

-Continued-

Figure 2. (page 2 of 2)

Brood Source

Buskin River Coho 0.06 Million Eggs
FTP # 93A-0105

	Sci/Ed Program	Kodiak Road System Stocking		
200 Eggs	Chiniak Elementary	Mayflower Lake	10,000 Fry	93A-0106
200 Eggs	Main Elementary	Island Lake	10,000 Fry	93A-0107
200 Eggs	Peterson Elementary	Dark Lake	10,000 Fry	193A-0108
200 Eggs	East Elementary	Mission Lake	5,000 Fry	93A-0109
200 Eggs	Old Harbor School	Potato Patch Lake	5,000 Fry	93A-0110
200 Eggs	Port Lions School	Pony Lake	0 Fry	93A-0110
200 Eggs	Ouzinkie School	Southern Lake	0 Fry	93A-0112
200 Eggs	Akhiok School			
	Sacrificed .001 M			
	Potato Patch .006M			

Figure 3. Pillar Creek Hatchery flow chart for 1996 egg takes, brood sources and stocking locations.

<u>Brood Source</u>	<u>Brood Source</u>
Upper Station/Little Kitoi Bay Sockeye	Malina Lake Sockeye
10.3 Million Eggs	0.85 Million eggs
1.5 Million Eggs	
Spiridon Lake 8.0 Million Fry FTP # 89A-0001/92A-0090	Malina Lake 0.25 Million PS FTP # 91A-0114
Jennifer Lake 0.2 Million Fry FTP # 91A-0020/92A-0088 FTP # 91A-0114	
<u>Brood Source</u>	<u>Brood Source</u>
Afognak Lake Sockeye	Saltery Lake Sockeye
2.8 Million Eggs	0.3 Million Eggs
Hidden Lake 0.55 Million Fry, 0.25 Million PS FTP # 91A-0017	Ruth Lake 0.13 Million fry FTP # New
Crescent Lake 0.35 Million Fry FTP # 91A-0022	
Waterfall Lake 0.3 Million Fry FTP # 91A-0021	
L. Kitoi Lake 0.15 Million PS FTP #93A-0140	<u>Brood Source</u>
Sorg Lake 0.15 Million PS FTP # 94A-0037	Laura Lake Sockeye
	1.0 Million Eggs
Afognak Lake contingency FTP # 88A-1021	Laura lake 0.7 Million Fry FTP # 93A-0113

Figure 3. (page 2 of 2)

Brood Source

Buskin River Coho 0.15 Million Eggs
FTP # 93A-0105

Sci/Ed Program		Kodiak Road System Stocking		
100 Eggs	Peterson Elementary (Ms. Dano)	Potato Patch Lake	100 Fry	P96-047
100 Eggs	East Elementary (Ms. Jacobson)	Potato Patch Lake	100 Fry	P96-038
150 Eggs	Peterson Elementary (Ms. Wall)	Potato Patch Lake	150 Fry	P96-001

SIGN-OFF

Chris Clevenger 3-21-96
Chris Clevenger
Hatchery Manager, Pillar Creek Date

Steve Honnold 3/21/96
Steve Honnold
Area Development Biologist, CFM&D Date

Jim McCullough 3/21/96
Jim McCullough
Regional Resource & Development Biologist, CFM&D Date

Dave Prokopowich 3/26/96
Dave Prokopowich
Area Management Biologist, CFM&D Date

Wayne Donaldson 3/29/96
Wayne Donaldson
Regional Management Biologist, CFM&D Date

Pete Probasco 4/1/96
Pete Probasco
Regional Supervisor, CFM&D Date

Len Schwarz 4/5/96
Len Schwarz
Area Biologist, Sport Fish Date

Doug McBride 5/6/96
Doug McBride
Sport Fish Regional Supervisor Date

Larry Malloy 3/21/96
Larry Malloy
Executive Director, KRAA Date

The 1996 Hatchery Management Plan for Pillar Creek Hatchery is hereby approved:

Robert Bosworth 5-8-96
Robert Bosworth, Deputy Commissioner, ADF&G Date

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